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(56) Documents cited
GB 1404443 A **GB 1340901 A** **GB 1316694 A**
GB 1152736 A **GB 0816927 A** **GB 0348216 A**

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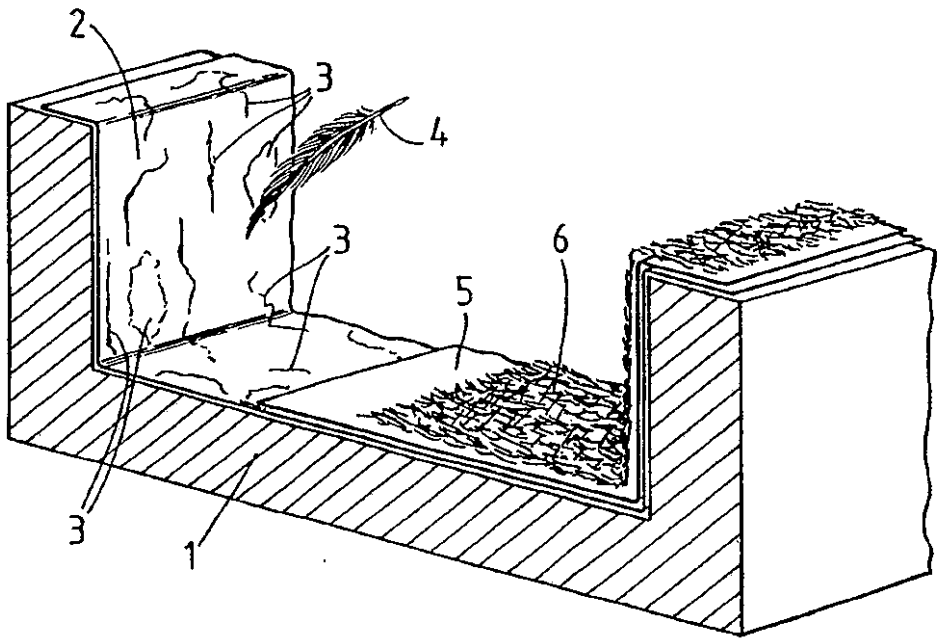
(54) Moulded article

(57) A moulded article such as a fireplace mantle, is produced by applying a clear coating 2 e.g. onto the inside surface of a mould, applying a decorative layer e.g. produced by means of a feather dipped in pigment, and then applying a coloured pigmented layer 3 on top of the decorative layer 3, and finally a back-up or reinforcing layer 6 is applied on top of the coloured layer. Alternatively, the decorative layer may be applied directly to the mould, and the clear coating applied to it after it has been removed from the mould.



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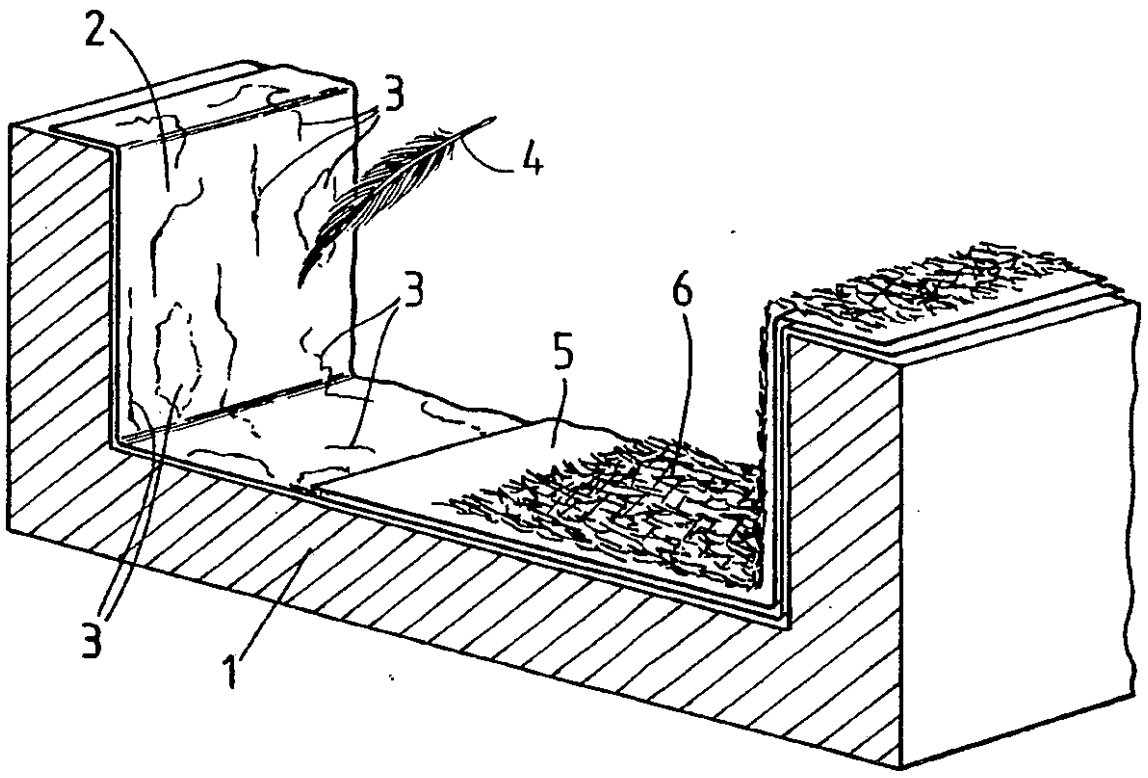
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IMPROVEMENTS IN OR RELATING TO FIREPLACES

This invention relates to improvements in or relating to fireplaces and more particularly to fireplace mantles.

Ornamental reproduction fireplaces and in particular marble fireplaces are becoming increasingly more popular today and there is an increasing demand for less expensive fireplaces due to the relatively high costs of materials such as marble. Hence, fireplace hearths and fireplace wall panels are frequently constructed from an "artificial" marble conglomerate consisting of real pieces of marble dispersed throughout a bonding agent. Even so, the costs of such an artificial marble is not that much less than the cost of real marble and there would certainly appear to be a market for a much more inexpensive product. Attention has also been focused on the fireplace mantles which accompany the hearths and wall panels, and even though the hearths and wall panels may be of marble or artificial marble the fireplace mantles are often a plain white product which may be a cast plaster product or of plastics. Once again there appears to be an ever increasing demand for the fireplace mantle itself to be of marble and, because of the high costs which would be involved in order to produce an ornate marble mantle, attempts have been made to produce

mantles giving the appearance of being made from marble. The current process employed for making "look-alike" marble mantles tends to be tedious and inefficient. The present process is a somewhat "hit and miss" approach so that sometimes a satisfactory result can be achieved but not with consistency and reliability. The present process relies on casting the fireplace mantle in a mould having outer and inner portions, the mantle being cast from an epoxy resin material. In order to achieve the semblance of marble a colouring pigment is poured or injected into the mould during the moulding process and this pigment mixes arbitrarily with the resin material to produce a marble-like veined effect. This process tends to be disadvantageous in that the precise nature of the marble "veining" is not closely controlled and, therefore, it can be difficult to provide articles of matching appearance. Additionally, the heat dispersion involved in the process can cause problems which may lead to breakages and shrinkages of the material. Additionally, the finished product may be rather heavy and it would not be unusual for the product to become damaged in transit. In fact, in an attempt to increase the transportability of the product and reduce this problem, fireplace mantles have been constructed in three parts and assembled in situ at the fireplace but in adopting such a solution problems once again tend to exist in matching up the marble veining effect provided

on the three component parts of the mantle. Overall, it is believed that the present process of manufacturing look-alike marble fireplace mantles tends to have a considerable number of disadvantages which could be avoided, and that the final product itself does not always have a satisfactory appearance and that both the weight and cost of the product could be considerably reduced.

It is an object of the present invention to at least alleviate one or more of the aforementioned, or other, disadvantages associated with the production of look-alike marble fireplace mantles, or indeed associated with other natural material (e.g. stone, onyx, granite) look-alike products, and even more generally, associated with providing new products of a unique or simulated appearance.

According to the present invention there is provided a method of making a fireplace mantle, comprising applying a first layer of transparent or translucent material to a mould, subsequently applying a decorative effect on or over the layer and subsequently applying a pigmented layer over the decorative effect so that the decorative effect is arranged in between said two layers, an additional back-up layer of material being applied over said pigmented layer.

By the present invention the required decorative effect for the fireplace mantle can be provided in a closely controlled manner during the moulding process, whilst working from inside the mould.

Usually, the first layer will be a clear layer or coating and, advantageously, may be a polyester gel (or a resin) which is conveniently sprayed or brushed onto the inside surface of the mould. Preferably, this layer is about .015 to .020 of an inch thick (.38 mm to .5 mm) or up to 0.7 mm thick since it has been found in practice that the gel layer might become affected, e.g. wrinkled during the moulding process, on application of the back-up layer, should it be too thick. In manufacturing a marble look-alike fireplace mantle, the best method the applicant has found involves allowing the first layer of polyester gel to cure for half an hour or so and then to apply the decorative effect whilst the gel is still tacky (but will not adhere to the finger). Preferably, in order to achieve a marble or veining effect in a controlled manner the decorative effect may consist of or include a pigment applied in a closely controlled way using e.g. a feather, stick or syringe and this may be allowed to cure before applying the pigmented layer which, in the case of an artificial marble fireplace mantle, is usually a white pigment. The pigmented layer may or may not comprise diluted pigment and could e.g.

comprise about 40% pigment and 60% clear, uncatalysed polyester resin. If the pigment is too concentrated the veins of the marble veining effect may be too wide. Preferably, the back-up layer is a glass fibre material which is applied after the pigmented layer has been allowed to cure, in order to produce a strong, light product. The weight of the finished product may be about one third of the weight of products produced by present processes.

The decorative effect may be any desired decoration, and could be a pigment applied with a feather and/or sponge or other item and indeed in producing an artificial marble effect, preferably, veining provided by the pigment applied with a feather is allowed to cure before further subtle marble simulation is achieved using other pigments applied with a sponge, said further pigments being allowed to cure before application of said pigmented layer.

The Applicant believes that marble simulated fireplace mantles produced by this process can readily be identified from other simulated marble products and, most importantly, matching articles of marble (whether other fireplace mantles or not) can readily be provided because of the closely controlled manner in which the mantle is made.

The decorative effect may comprise pigments of one or more different colours and indeed the method of the present invention offers opportunities for producing fireplaces with new as well as simulated appearances.

Further according to the present invention there is provided a fireplace mantle made in accordance with the statement of invention on page 3 (last paragraph on page 3) of the present specification. It is possible that the present process may be extended to making articles which are not fireplaces, for example marble baths or sanitaryware and, therefore, further according to the present invention there is provided a method of making a moulded article having a decorative effect, said method comprising applying a first layer of transparent or translucent material to the inside of a mould, subsequently applying a decorative effect on or over said first layer, said decorative effect comprising the application of a colouring pigment, subsequently applying a pigmented layer over the decorative effect and so that the decorative effect is sandwiched in between said two layers, applying a further, back-up layer, preferably of glass fibre, over the pigmented layer.

Once again, the first layer is, preferably, a polyester gel which is sprayed on, and the pigmented layer is also, preferably, a pigmented gel layer.

It is also possible that the first layer of transparent or translucent material be omitted from the mould so that the decorative effect is applied directly onto the inside surface of the mould.

Therefore, still further according to the present invention there is provided a method of making a fireplace mantle, comprising applying a decorative effect in a controlled manner onto the inside surface of the mould, subsequently applying a pigmented layer over the decorative effect, an additional back-up layer of material being applied over said pigmented layer, a further layer of transparent or translucent material being applied over the decorative effect after extraction from the mould, so that the decorative effect is arranged in between said further layer and said pigmented layer. In this instance said further layer could be any suitable lacquer, resin, varnish e.g. polyurethane, or coating.

An embodiment of a method of making a fireplace mantle, and a mantle made by the method, will now be described by way of example only with reference to the single, much simplified, diagrammatic, single figure of the drawings, illustrating pictorially the stages in the mantle manufacturing process.

The figure shows a sectional view of a mould 1 which, in this instance, is a mould for making a

fireplace mantle (not shown). It is possible that the process may be applied to other articles instead of fireplace mantles although it is believed to be particularly relevant and applicable to such articles.

In this process, the mould 1 only comprises an outer portion or shell and there is no inner mould portion unlike present processes for producing cast fireplace mantles, which include both inner and outer mould portions. First of all, a clear polyester gel coating or layer 2 is sprayed onto the inside surface of the mould 1. This first gel layer 2 is a clear layer, in this instance, but it could be translucent. The gel layer is about .015 to .02 of an inch thick and this layer is allowed to cure for half an hour or so before a decorative effect 3 is applied on top of the first gel layer 2 whilst that gel layer is still tacky.

In this instance, the fireplace mantle to be produced by the process is a marble look-alike mantle and the decorative effect 3 is, therefore, an artificial marbling effect. The marble veining of the decorative effect 3 is produced, in this instance, by means of a feather 4 dipped into pigment of the right colour, said feather being moved over the inner surface (the upper surface shown in the drawings) of the gel layer 2 in a closely controlled manner. This method allows a marble

veining effect to be accurately reproduced in a similar fashion time and time again rather than in a hit and miss manner. Additionally, matching marble items can be readily produced in similar manner. In order to achieve more subtle effects appearing in natural marble, other than veining, the decorative effect 3 also includes pigment applied on top of the gel layer 2 by other means, for example by a sponge, and different coloured pigments will normally be utilised with one pigment being allowed to cure on the surface of the gel layer 2 before the next coloured pigment is applied. After the last pigment of the decorative effect has been applied and allowed to cure, a second polyester gel layer 5 is sprayed onto the top of the decorative effect 3 and this extends over the gel layer 2. This second polyester gel layer 5 is coloured rather than clear or translucent and in producing a marble effect will usually be white.

After the second, pigmented, gel layer 5 has been allowed to cure a back-up or reinforcing layer, in this instance of glass fibre material, is applied on top of the second gel layer 5. Advantageously, a reinforcing framework (usually of wood or possibly cardboard - not shown here) may be introduced into the mould 1 and covered with glass fibre in order to produce a stronger reinforced product, usually before the fireplace mantle is extracted from the mould.

Usually, the gel layers 2 and 5 are sprayed into the mould at a temperature not below about 20°C.

Advantageously, a relatively light product is produced in a closely controlled manner and the process may be utilised to provide a simulated appearance of a material other than marble, for example granite or onyx, in which the decorative effect may be produced in any convenient manner using any convenient means of application of same to the inside of the first gel layer.

The result achieved by the method in accordance with the present invention, whether or not natural products or simulated, produces a unique effect since the decorative effect is applied effectively from the "inside" of the article, in a controlled manner.

A summary of a possible 6-stage manufacturing process is given below:-

1. THE INITIAL COATING (FIRST LAYER DONE INSIDE - OR OUTSIDE - THE MOULD

Clear or translucent resin in styrene sprayed or brushed into a mould at the recommended temperature 20°C and allowed to cure. This coating could instead be applied last after the item has been extracted from the mould.

2. THE VEINING

(If the kind of natural material simulation involves it). A neat polyester pigment or a diluted mixture of for instance 40% pigment 60% resin, usually uncatalysed because it has been found that application of subsequent catalysed coats on the veining will be cured and merge into the background more softly. It may be applied with a feather, stick, syringe etc. The amount, whether diluted or undiluted, is quite critical, so as not to let the veins move sideways too much.

3. THE WASH COAT (LEADING UP TO THE BACKGROUND COAT)

This coat can be applied anytime after the veining. For marble, a watery look is needed, so a dilution of 50% resin with 50% gelcoat catalysed is brushed or sprayed into the mould.

4. BACKGROUND COAT

Usually, a dilution of pigment and resin (usually 50/50) is catalysed and applied on top of the wash coat before it has cured. To get the desired effect of marble for instance a sponge is used all over the mould or anything else suitable, e.g. paper rolled up into a ball or any textured object.

5. THE FINAL BACK-UP GELCOAT (PROTECTING THE EFFECT SIMULATED FROM THE FOLLOWING BACK-UP LAYERS APPLIED - USUALLY G.R.P.)

This coat is applied after the background coat has

cured. Catalysed coloured gelcoat (usually white) is used for the final back-up gelcoat and this can be brushed or sprayed on.

6. THE TYPE OF MATERIAL USED FOR THE MOULDED ITEM (E.G. FIREPLACE MANTLE)

After the final back-up gelcoat has cured, several layers of fibreglass material are laid up in the mould with a framework inserted to give a light strong item. Any substance could be used inside the mould for the final item e.g. polyester casting resin, foam plaster but it is believed that G.R.P gives a very strong and light combination of materials.

The catalyst used for the polyester resins may be an organic peroxide and is, preferably, Methyl Ethyl Ketone Peroxide.

The Applicant has found that it is advantageous for the wash coat to contain an amount of filler material (any inert powder or granulated substance such as calcium carbonate, known in the art as marble flour, trade name Microdol). The filler material gives a greater translucent depth. Thus the wash coat may comprise the filler added to resin to alter its consistency, texture or other properties. The wash coat may comprise up to about fifty percent of filler material. The filler

material may include thixotropisers, metal powders, extenders and so on. Preferably, "marble flour" is used to which is added a Polyester gel-coat (tinted if required) to enable the mixture, catalysed at this point, to be painted onto the mould.

It is to be understood that the scope of the present invention is not to be unduly limited by the particular choice of terminology and that a specific term may be replaced or supplemented by any equivalent or generic term where sensible. Further, it is to be understood, that individual features, method or functions, related to the fireplace mantle or methods of making same or products with a simulated natural or unique appearance might be individually patentably inventive. In particular, any disclosure in this specification of a range for a variable or parameter shall be taken to include a disclosure of any selectable or derivable sub-range within that range and shall be taken to include a disclosure of any value for the variable or parameter either within or at an end of the range.

Additionally, present processes for making artificial marble fireplaces tend to result in a relatively heavy fireplace mantle being produced. Since the fireplace mantle produced by the process of the present invention can be relatively light it may also be

possible to mould the fireplace mantle together with a fireplace wall panel and/or the hearth of the fireplace.

CLAIMS

1. A method of making a fireplace mantle, comprising applying a first layer of transparent or translucent material to a mould, subsequently applying a decorative effect on or over the layer and subsequently applying a pigmented layer over the decorative effect so that the decorative effect is arranged in between said two layers, an additional back-up layer of material being applied over said pigmented layer.

2. A method as claimed in Claim 1 in which the first layer is a clear layer or coating.

3. A method as claimed in Claim 2 in which said first layer is a polyester gel (or a resin) which is sprayed or brushed onto the inside surface of the mould.

4. A method as claimed in any one of the preceding claims in which said first layer is about .015 to .020 of an inch thick (.38 mm to .5 mm) or up to 0.7 mm thick.

5. A method as claimed in any one of the preceding claims in which said mantle is a marble look-alike fireplace mantle.

6. A method as claimed in any one of the preceding

claims in which in order to achieve a marble or veining effect in a controlled manner the decorative effect consists of or includes a pigment applied in a closely controlled way using e.g. a feather, sponge, stick or syringe.

7. A method as claimed in Claim 6 in which the decorative effect is allowed to cure before applying the pigmented layer.

8. A method as claimed in Claim 6 or Claim 7 in which the pigmented layer comprises diluted pigment.

9. A method as claimed in Claim 8 in which the pigmented layer comprises about 40% pigment and 60% clear, uncatalysed polyester resin.

10. A method as claimed in any one of Claims 6 to 9 in which in producing an artificial marble effect, veining provided by the pigment applied with a feather is allowed to cure before further subtle marble simulation is achieved using other pigments applied with a sponge, said further pigments being allowed to cure before application of said pigmented layer.

11. A method as claimed in any one of the preceding claims in which the decorative effect comprises pigments

of one or more different colours.

12. A method as claimed in any one of the preceding claims in which the back-up layer is a glass fibre material, casting resin or plaster or plastics which is applied after the pigmented layer has been allowed to cure.

13. A method of making a fireplace mantle substantially as herein described.

14. A fireplace mantle made in accordance with the method of any of the preceding claims.

15. A method of making a moulded article having a decorative effect, said method comprising applying a first layer of transparent or translucent material to the inside of a mould, subsequently applying a decorative effect on or over said first layer, said decorative effect comprising the application of a colouring pigment, subsequently applying a pigmented layer over the decorative effect and so that the decorative effect is sandwiched in between said two layers, and applying a further, back-up layer over the pigmented layer.

16. A method as claimed in Claim 15 in which the back-up layer is of glass fibre, casting resin or plaster or

plastics, and/or in which the decorative effect is applied directly to the inside surface of the mould and said first layer is applied on top of the decorative effect after said article has been extracted from the mould.

17. A method as claimed in Claim 15 or Claim 16 in which the first layer is a polyester gel which is sprayed on.

18. A method as claimed in Claim 17 in which the pigmented layer is a pigmented gel layer.

19. A method of making a fireplace mantle, comprising applying a decorative effect in a controlled manner onto the inside surface of a mould, subsequently applying a pigmented layer over the decorative effect, an additional back-up layer of material being applied over said pigmented layer, a further layer of transparent or translucent material being applied over the decorative effect after extraction from the mould, so that the decorative effect is arranged in between said further layer and said pigmented layer.

20. A method as claimed in Claim 19 in which said further layer is a lacquer, resin, varnish e.g. polyurethane, or coating.

21. A method of making an artificial marble item, comprising:-

(1) applying a first layer of transparent or translucent material to a mould,

(2) applying a decorative marble veining effect onto said first layer, and preferably:-

(3) applying a second layer or wash coat over the decorative veining effect, and/or

(4) applying a background layer over said second layer, which background layer is pigmented, and/or

(5) applying a further layer over said background layer, and/or

(6) applying an additional back-up layer of material over said further layer.

22. A method as claimed in Claim 21 in which the first layer is allowed to cure before application of the decorative veining effect.

23. A method as claimed in Claim 21 or Claim 22 in which the decorative veining effect is uncatalysed.

24. A method as claimed in any one of Claims 21 to 23 in which said first layer is a resin in styrene or gel which is sprayed or brushed onto the mould and/or the decorative veining effect is a neat pigment or a diluted mixture of about 40% pigment and 60% resin.

25. A method as claimed in any one of Claims 21 to 24 in which said first layer is applied at a temperature of about 20°C.

26. A method as claimed in any one of Claims 21 to 25 in which the wash coat comprises a dilution of about 50% resin with about 50% gel coat and/or is catalysed and/or is sprayed or brushed on top of the first layer and veining effect.

27. A method as claimed in Claim 26 in which the wash coat comprises up to 50% filler material (e.g. an inert powder or granulated substance such as calcium carbonate).

28. A method as claimed in any one of Claims 21 to 27 in which the background layer is catalysed and applied onto the wash coat before the wash coat is cured.

29. A method as claimed in Claim 28 in which the background layer comprises a dilution of pigment and resin.

30. A method as claimed in any one of Claims 21 to 29 in which said further layer is applied after curing of the background layer and preferably consists of a catalysed coloured gel coat.

31. A method as claimed in Claim 30 in which the additional back-up layer consists of several layers of fibre glass and/or consists of casting resin, plaster or G.R.P.

32. A method as claimed in any one of Claims 21 to 31 in which one or more of said layers are catalysed by an organic peroxide, e.g. Methyl Ethyl Ketone Peroxide.

33. A method as claimed in any one of Claims 21 to 32 in which the item is a fireplace mantle moulded together with a wall panel and/or hearth.

34. A method as claimed in any one of Claims 21 to 33 in which said first layer is not applied to the mould but said decorative veining effect is applied onto the mould instead of said first layer, said first layer being applied on top of the veining effect on removal of said item from the mould.